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| EXAMINER | |
|---|---|
| YANG, NELSON C | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1641 | |

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/311,329 | WORTHINGTON ET AL. | |
| | Examiner | Art Unit | |
| | Nelson Yang | 1641 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *16 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-92* is/are pending in the application.

4a) Of the above claim(s) *35,38-48,50-84,91 and 92* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34,36 and 37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

I. Applicant's election without traverse of claims 1-34, 36-37, 49, 85-90 in the reply filed on September 2, 2003 is acknowledged.

1. Claims 35, 38-48, 50-84, 91-92 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on September 2, 2003.

### *Response to Amendment*

2. Applicant's amendment of claims 1-34, 36-37, 49, 85-90 is acknowledged and has been entered.

3. Claims 1-92 are currently pending.

4. Claims 35, 38-48, 50-84, 91-92 are withdrawn.

### *Claim Rejections - 35 USC § 112*

II. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2, 18-31, 33, 46, 49, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 2 recites the limitation "the same optical pickup" in the last line. There is insufficient antecedent basis for this limitation in the claim. It is also unclear whether the limitation that the investigational features and trackable attribute are readable by the same optical

pickup is to be interpreted that the feature and attribute are readable simultaneously, or if they can be read by the same device, or if they produce a single signal together.

7. With respect to claims 18-24, it is unclear what physical characteristics of the investigational features would be necessary for the features to be detectable as an amplitude variation of an HF signal associated with the optical disc reader. The limitations as currently recited would appear to further limit the optical disc reader, which is not being claimed, and therefore would not give the limitations any patentable weight.

8. With respect to claims 18-20, it is also unclear how the HF signal is associated with the optical disc reader.

9. With respect to claims 25-31, 49, it is unclear which side of the optical disc would be the laser-distal side, and which side would be the laser-proximal side, since a laser is not being claimed, and therefore there would be no point of reference to determine the laser-proximal and laser-distal sides. Furthermore, the laser-proximal side and laser-distal side appear to be variable limitations that would depend on the position of the disc, and not on the disc itself, as the laser-proximal side and laser-distal side could easily be switched by flipping the disc over. Currently the claims are interpreted as the reflective surface and trackable attribute being on the same side of the substrate.

10. With respect to claim 33, it is not entirely clear what is meant by the limitation that the holographic image is projected confocally to the investigational features, whether the image is observed on the investigational features, or if some other meaning is intended. Further clarification would be greatly appreciated.

11. Claim 46 recites the limitation "the laser" in fourth line. There is insufficient antecedent basis for this limitation in the claim. This is also applicable to the recitation of "the laser" in claim 37.

12. Claim 49 recites the limitation "the laser-distal side" in the last line. There is insufficient antecedent basis for this limitation in the claim.

13. With respect to claim 49, the limitation that the investigational features are disposed upon the laser-distal side of the cover is ambiguous. It is unclear if the investigational features are located on the cover itself, or if they are merely located on the side facing the laser-distal side. If the investigational features are located on the cover itself, it is unclear how they can be located on both the cover and on the disc.

***Claim Rejections - 35 USC § 102***

III. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

14. Claims 1-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Fairchild et al [US 5,508,985].

With respect to claim 1, Fairchild et al teach a writable compact disk with a wobble groove and prerecorded synchronization marks and address information, which are detected and processed to produce pseudo-sync signals (column 1, lines 51-65).

15. With respect to claims 2-4, Fairchild et al teach that an FM signal is extracted from the wobble groove and converted into biphase data, and sync marks are detected in each block of the biphase data (column 1, lines 65 – column 2, line 25).

16. With respect to claims 5-8, Fairchild et al teach that the sync marks and address information are extracted from the wobble groove formed in the compact disk (column 1, lines 57-65).

17. With respect to claims 9-17, the trackable attribute is a wobble groove (column 1, lines 56-63).

18. With respect to claims 18-20, a high frequency phase-lock loop is provided which responds to the extracted FM signal (column 2, lines 4-5). Furthermore, a time window signal is generated from the valid sync detect signal preceding a given block of information and the high frequency clock from the HF PLL (column 2, lines 12-18).

19. With respect to claims 21-24, Fairchild et al teach that to determine where the ATIP data exists, it is necessary to detect a sync mark, and that each sync mark will be detected to indicate the beginning of the address information (column 4, lines 4-15).

20. With respect to claims 25-27, Fairchild et al teach that an optical head would process light signals reflected from the disk or writes optical data onto the disk preferably in the middle of the wobbled groove (column 3, lines 30-35).

21. With respect to claims 28-31, Fairchild et al teach that the sync marks and address information are extracted from the wobble groove formed in the compact disk (column 1, lines 57-65).

22. Claims 1-4, 6-9, 21, 25-31, 85-89 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al [US 5,922,617].

With respect to claim 1, Wang et al teach a circular disc having a plurality of concentric tracks with headers in the tracks providing distinctive light signals (attribute trackable), particles located at different sites in the tracks, wherein each particle is conjugated with a binding molecule (investigational features) (claim 1). The header may be formed from a material which has a different reflectivity from the surface of the solid substrate (column 10, lines 35-40).

23. With respect to claims 2-4, Wang et al teach a means for transmitting said signals from said reader for detecting the presence of a label at a site, and means for receiving the focus signal from a focus detector and directing an optical moving means to move the optical means to maintain the optical means in focus at the sites (claim 1, step E).

24. With respect to claims 6-9, Wang et al teach a circular disc having a plurality of concentric tracks with headers in the tracks providing distinctive light signals (attribute trackable), particles located at different sites in the tracks, wherein each particle is conjugated with a binding molecule (investigational features) (claim 1).

25. With respect to claim 21, Wang et al teach that a signal for determining the presence of a label at a site, the signal indicating the binding of a bound member to a mobile member (claim 1, step E).

26. With respect to claim 25-31, Wang et al teach that particles are located at different sites (investigational features) in said tracks with headers (trackable attribute) (claim 1), and therefore are on the same side.

27. With respect to claims 85-89, Wang et al teach that the investigational features can be antibodies, ligands, enzymes, nucleic acids (column 3, lines 45-65).

***Claim Rejections - 35 USC § 103***

IV. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

28. Claims 32-34, 36-37, 49 rejected under 35 U.S.C. 103(a) as being unpatentable over Fairchild et al [US 5,508,985] in view of Horimai et al [US 5,917,798].

With respect to claims 32-34, Fairchild et al teach an optical disk with a reflective surface and a trackable attribute (wobble groove) as discussed above. Fairchild et al do not teach that the reflective surface projects a holographic image.

Horimai et al, however, do teach an information recording layer that has been recorded by holography (column 4, lines 38-45), and that the holograms recorded are referred to as a stacks (column 2, lines 40-45). Horimai et al further teach the use of holography in order to cope with demands for super-high density of optical recording (column 1, lines 35-40).

Therefore it would have been obvious in the method of Fairchild et al for the reflective surface to project holographic images, as suggested by Horimai et al, in order to cope with demands for super-high density of optical recording.

29. With respect to claims 36-37, 49, Horimai et al teach an objective lens (laser refracting cover) where light is condensed so as to impinge upon the optical information recording medium in such a manner to minimize the diameter of the recording reference light before reaching the interface between the holographic layer and the protective layer (column 18, lines 26-63, fig. 14). The holographic layer would therefore be located on the laser distal side of the objective lens.

30. Claims 10-24 rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al [US 5,922,617] in view of Fairchild et al [US 5,508,985].

With respect to claims 10-17, Wang et al teach circular disc having a plurality of concentric tracks with headers in the tracks providing distinctive light signal, and a focus control for controlling any wobble in the disk (column 15, lines 40-45). Wang et al do not teach a wobble groove.

Fairchild et al, however, do teach a wobble groove and further teach that the groove provides a means for tracking on the disk while writing or reading data that is written in the groove (column 1, lines 20-30).

Therefore it would have been obvious in the disk of Wang et al to include a wobble groove, as taught by Fairchild et al, in order to provide a means for tracking on the disk while writing or reading data that is written in the groove.

31. With respect to claims 18-20, Fairchild et al teach a high frequency phase-lock loop is provided which responds to the extracted FM signal (column 2, lines 4-5). A time window signal is generated from the valid sync detect signal preceding a given block of information and the high frequency clock from the HF PLL (column 2, lines 12-18). Wang et al teach that the sites can be irradiated to produce a detectable light signal in the presence of a label (claim 1).

32. With respect to claim 22-24, Wang et al teach that a signal for determining the presence of a label at a site, the signal indicating the binding of a bound member to a mobile member (claim 1, step E).

33. Claims 32-33, 36-37, 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al [US 5,922,617] in view of Horimai et al [US 5,917,798].

With respect to claims 32-33, Wang et al teach an optical disk with a reflective surface and a trackable attribute as discussed above. Wang et al do not teach that the surface projects a holographic image.

Horimai et al, however, do teach an information recording layer that has been recorded by holography (column 4, lines 38-45), and that the holograms recorded are referred to as a stacks (column 2, lines 40-45). Horimai et al further teach the use of holography in order to cope with demands for super-high density of optical recording (column 1, lines 35-40).

Therefore it would have been obvious in the method of Wang et al for the reflective surface to project holographic images, as suggested by Horimai et al, in order to cope with demands for super-high density of optical recording.

34. With respect to claims 36-37, 49, Horimai et al teach an objective lens (laser refracting cover) where light is condensed so as to impinge upon the optical information recording medium

in such a manner to minimize the diameter of the recording reference light before reaching the interface between the holographic layer and the protective layer (column 18, lines 26-63, fig. 14). The holographic layer would therefore be located on the laser distal side of the objective lens.

35. With respect to claim 90, Wang et al teach that the investigational features can be antibodies, ligands, enzymes, nucleic acids (column 3, lines 45-65).

36. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al [US 5,922,617] in view of Horimai et al [US 5,917,798] as applied to claims 1, 32, 33 above, and further in view of Fairchild et al [US 5,508,985].

With respect to claims 10-17, Wang et al teach circular disc having a plurality of concentric tracks with headers in the tracks providing distinctive light signal, and a focus control for controlling any wobble in the disk (column 15, lines 40-45). Horimai et al, however, do teach an information recording layer that has been recorded by holography (column 4, lines 38-45), and that the holograms recorded are referred to as a stacks (column 2, lines 40-45). Neither Wang et al or Horimai et al teach a wobble groove.

Fairchild et al, however, do teach a wobble groove and further teach that the groove provides a means for tracking on the disk while writing or reading data that is written in the groove (column 1, lines 20-30).

Therefore it would have been obvious in the disk of Wang et al and Horimai et al to include a wobble groove, as taught by Fairchild et al, in order to provide a means for tracking on the disk while writing or reading data that is written in the groove.

***Conclusion***

V. No claims are allowed.

37. The following references are also cited as art of interest: Park et al [US 6,391,625] teach a biochip comprising an optical biodisc with a reflecting layer, a wobble boundary, and a pattern of bound biomaterial formed on a predetermined region of the active layer, where the biomaterial is selected from peptides, proteins, antibodies, DNA, PNA, and enzymes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson Yang whose telephone number is (571) 272-0826. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long V Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nelson Yang
Patent Examiner
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07/08/01